

Minnesota Cover Crop Decision Tool

Minnesota State Technical Committee Meeting
July 12, 2012



UNIVERSITY OF MINNESOTA
EXTENSION

Driven to DiscoverSM

WHY ME?



- Jill Sackett, Extension Educator – Conservation Agronomist
 - UMN Extension – funded by: Rural Advantage and GBERBA
- Working on NCR-SARE cover crop grant

Cover Crop Decision Tool

- A web-based tool for selecting species of cover crops to use in **your** rotation, for **your** specific purpose or need
- Midwest Cover Crops Council
 - <http://www.mccc.msu.edu/>
- Grant funded
- Based on charts found in SARE's "Managing Cover Crops Profitably"

MN Cover Crop Decision Tool

- Organizational committee formed (Jan. 2011)
 - MN Extension Educators, researchers, students, farmers, agency personnel, etc. that have worked with cover crops species
- One face-to-face with decision tool leaders
- Conference calls until finished with data collection/input (June 2011)
- Live on the WEB – October 2011

http://www.mccc.msu.edu/

032 x MCCC website x
mccc.msu.edu/selectorINTRO.html



Illinois Indiana Iowa Michigan Minnesota North Dakota Ohio Wisconsin Ontario



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Midwest Cover Crops Council Cover Crop Decision Tools

The Midwest Cover Crop Council (MCCC) Cover Crop Decision Tools are web-based systems to assist farmers in selecting cover crops to include in field crop and vegetable rotations.

Field crops (Indiana, Michigan, Minnesota, Ohio, and Wisconsin)

Instructions for Using the Cover Crop Decision Tool-Field Crops

[Go to the Cover Crop Decision Tool-Field Crops](#)
(If your browser is Internet Explorer (IE), please close the Favorites Pane for proper display)

Vegetables (Michigan)

Instructions for Using the Cover Crop Decision Tool-Vegetables

[Go to the Cover Crop Decision Tool-Vegetables](#)

Other states/provinces in the MCCC are currently developing their information. They will be added to the Cover Crops Species Information. We welcome your input and comments on the Cover Crop Decision Tools. Send them to Dean Baas at baasdean@msu.edu.

About the Cover Crop Decision Tools

The Cover Crop Decision Tools are an initiative by the MCCC to consolidate cover crop

Location Information

State/Province:

Select a state ▼

- Select a state
- Indiana
- Michigan
- Minnesota
- Ohio
- Ontario
- Wisconsin

None or Prevented Planting ▼

Plant Date:

Harvest Date:

Pictures 1 and 2 - Courtesy of: Dean Baas, MSU Extension

	Mar 1	Mar 15	Apr 1	Apr 15	May 1	May 15	Jun 1	Jun 15	Jul 1	Jul 15	Aug 1	Aug 15	Sep 1	Sep 15	Oct 1	Oct 15	Nov 1	Nov 15	Dec 1	Dec 15	Jan 1	Jan 15	Feb 1	Feb 15
Nonlegumes																								
Barley, Spring (C)																								
Barley, Winter (E)																								
Buckwheat (C)																								
Flax (E)																								
Millet, Foxtail (E)																								
Millet, Japanese (E)																								
Millet, Pearl (E)																								
Millet, Proso (E)																								
Oats (C)																								
Rye, Winter Cereal (C)																								
Ryegrass, Annual (C)																								
Sorghum-sudangrass (C)																								
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Wheat, Winter (C)																								
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Mustard, Yellow (E)																								
Radish, Oilseed (C)																								
Rapeseed/Canola (E)																								
Turnip, Forage type (C)																								
Legumes																								
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Alfalfa - Non-dormant (E)																								
Clover, Berseem (E)																								
Clover, Crimson (C)																								
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Cowpea (C)																								
Pea, Field/Winter (C)																								
Soybeans (E)																								
Sweetclover (C)																								
Vetch, Hairy (C)																								
Mixes																								
50% HV/50% WC Rye (E)																								
50% W.Pea/50%OSR (E)																								
60% A Ryegr/40% OSR (E)																								
60% Cr Cl/40% A Ryegr (E)																								
60% Cr Cl/40% Oats (E)																								
60% Oats/40% OSR (E)																								



State/Province:

Minnesota

County:

Martin

Cash Crop Information

Crop:

Warm Season Vegetables

Plant Date:

06/01/12

Harvest Date:

08/29/12

Field Information

Soil Drainage Class

Moderately Well Drained

Flooding/Ponding

No

Cover Crop Attributes

#1

Select an attribute

#2

Select an attribute

#3

Select an attribute

**Select cover crop to create
information sheet**

50% HV/50% WC Rye

Submit

Attribute Ratings: 0-Poor, 1-Fair, 2-Good, 3-Very Good, 4-Excellent

Reliable Establishment

Freeze Risk to Establishment

Frost Seeding

Cash Crop Growing Period: Requires Aerial Seeding or Interseeding of Cover Crop

	Mar 1	Mar 15	Apr 1	Apr 15	May 1	May 15	Jun 1	Jun 15	Jul 1	Jul 15	Aug 1	Aug 15	Sep 1	Sep 15	Oct 1	Oct 15	Nov 1	Nov 15	Dec 1	Dec 15	Jan 1	Jan 15	Feb 1	Feb 15
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State/Province:

Minnesota

County:

Martin

Cash Crop Information

Crop:

Warm Season Vegetables

Plant Date:

06/01/12

Harvest Date:

08/29/12

Field Information

Soil Drainage Class

Moderately Well Drained

Flooding/Ponding

No

Cover Crop Attributes

#1

Weed Fighter

#2

Nitrogen Scavenger

#3

Erosion Fighter

Select cover crop to create
information sheet

50% HV/50% WC Rye

Submit

Attribute Ratings: 0-Poor, 1-Fair, 2-Good, 3-Very Good, 4-Excellent

Reliable Establishment

Freeze Risk to Establishment

Frost Seeding

Cash Crop Growing Period: Requires Aerial Seeding or Interseeding of Cover Crop

Erosion Fighter
Nitrogen Scavenger
Weed Fighter

Nonlegumes

Barley, Spring (C) 3 3 3
Barley, Winter (E) 3 4 4
Buckwheat (C) 3 2 2
Flax (E) 0 2 1
Millet, Foxtail (E) 3 3 3
Millet, Japanese (E) 3 3 3
Millet, Pearl (E) 3 3 3
Millet, Proso (E) 3 3 3
Oats (C) 2 3 3
Rye, Winter Cereal (C) 4 4 4
Ryegrass, Annual (C) 2 3 3
Sorghum-sudangrass (C) 4 4 3
Sudangrass (C) 4 4 3
Triticale, Winter (C) 3 4 4
Wheat, Spring (C) 2 3 3
Wheat, Winter (C) 3 4 4

Brassicas

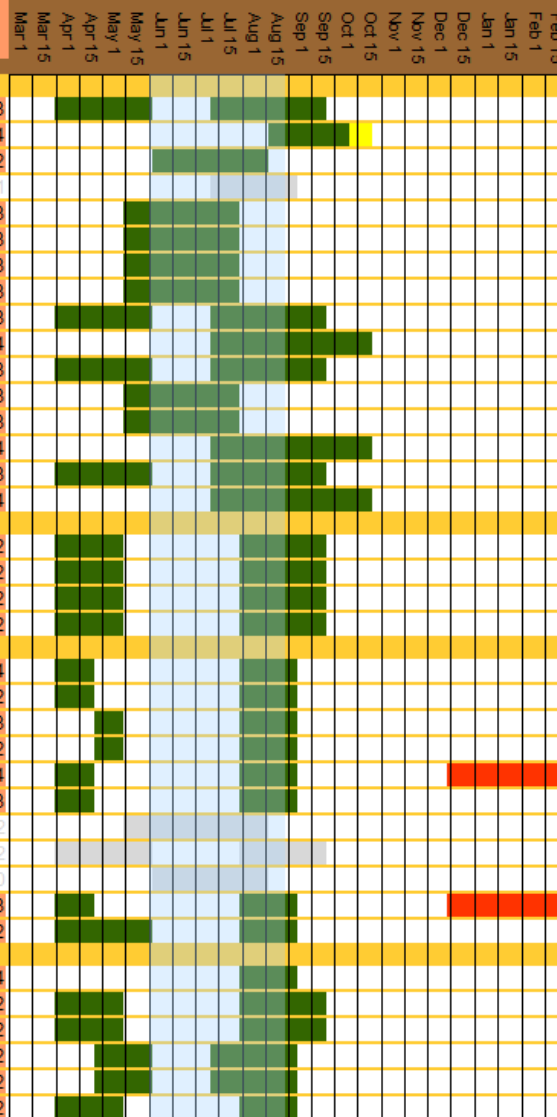
Mustard, Yellow (E) 3 3 2
Radish, Oilseed (C) 3 3 2
Rapeseed/Canola (E) 2 3 2
Turnip, Forage type (C) 2 3 2

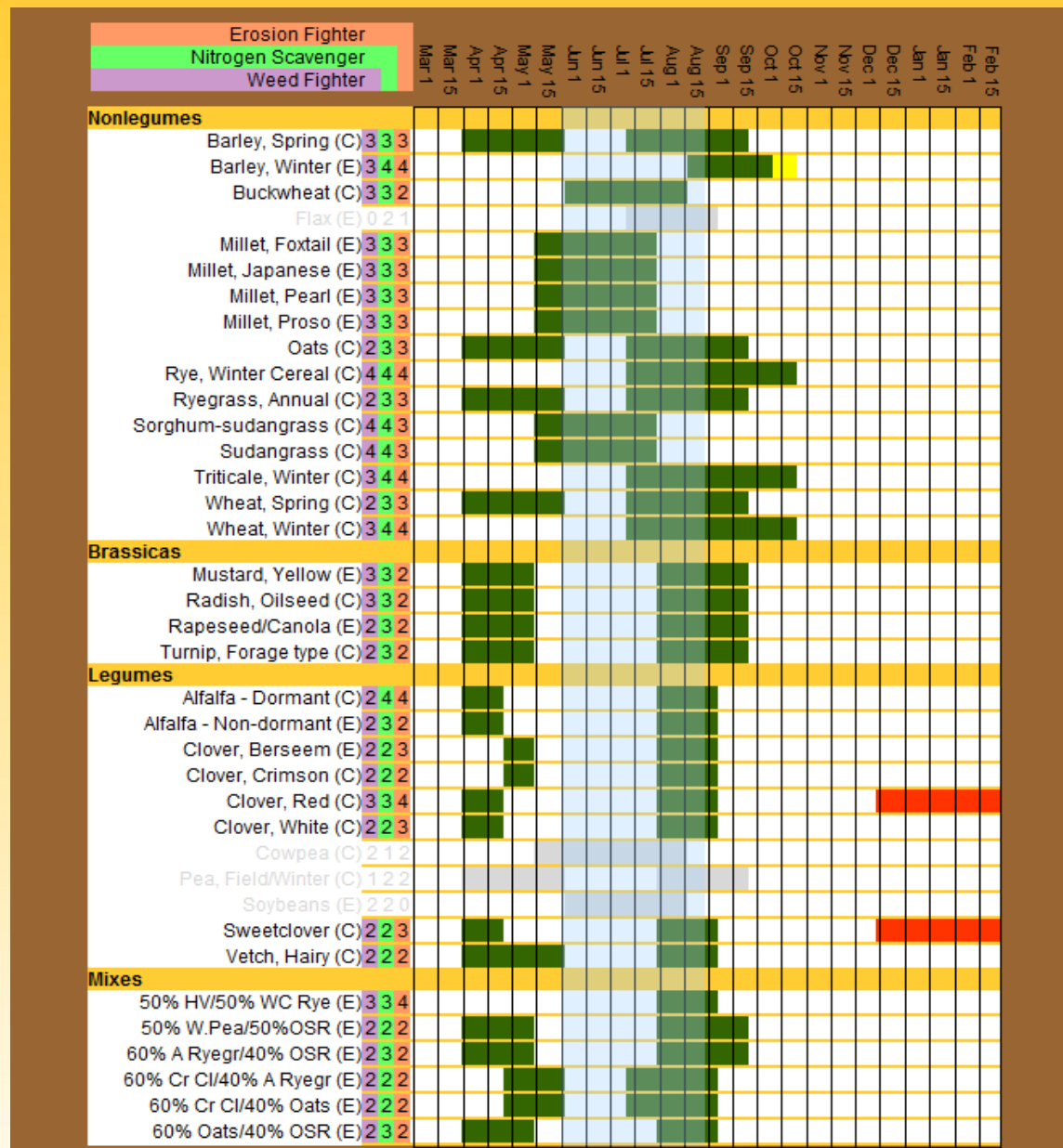
Legumes

Alfalfa - Dormant (C) 2 4 4
Alfalfa - Non-dormant (E) 2 3 2
Clover, Berseem (E) 2 2 3
Clover, Crimson (C) 2 2 2
Clover, Red (C) 3 3 4
Clover, White (C) 2 2 3
Cowpea (C) 2 1 2
Pea, Field/Winter (C) 1 2 2
Soybeans (E) 2 2 0
Sweetclover (C) 2 2 3
Vetch, Hairy (C) 2 2 2

Mixes

50% HV/50% WC Rye (E) 3 3 4
50% W.Pea/50% OSR (E) 2 2 2
60% A Ryegr/40% OSR (E) 2 3 2
60% Cr Cl/40% A Ryegr (E) 2 2 2
60% Cr Cl/40% Oats (E) 2 2 2
60% Oats/40% OSR (E) 2 3 2





State/Province:

Minnesota ▼

Attribute Ratings: 0-Poor, 1-Fair, 2-Good, 3-Very Good, 4-Excellent

Reliable Establishment

Freeze Risk to Establishment

Frost Seeding

Cover Crop Attributes

#1

Weed Fighter ▼

#2

Nitrogen Scavenger ▼

#3

Erosion Fighter ▼

Select cover crop to create information sheet

Rye, Winter Cereal ▼

Submit

60% Oats/40% OSR (E) 2 3 2



Cover Crop Information Sheet

Considerations for using Rye, Winter Cereal in Minnesota

There are no special considerations

Termination Information

Termination Methods: Tillage, Mow, Chemical, Roller Crimper

Comments: If terminating with only tillage, multiple passes often required/Crimp during reproductive stage (milk or dough stage). Roller crimping is the most difficult/variable termination method.

Performance and Roles

Legume Nitrogen Source: Poor

Total Nitrogen: 0 (lb./A)

Dry Matter: 2500-6000 (lb./A/yr.)

Nitrogen Scavenger: Excellent

Soil Builder: Excellent

Erosion Fighter: Excellent

Weed Fighter: Excellent

Good Grazing: Excellent

Quick Growth: Excellent

Lasting Residue: Excellent

Forage Harvest: Very Good

Grain Seed Harvest: Excellent

Cash Crop Interseed: Poor

Comments: Tolerates triazine herbicides; one of the latest seeded cover crops.

Potential Disadvantages

Delayed Emergence: Rarely a problem

Increased Weed Potential: Could be a moderate problem

Increased Insects/Nematodes: Could be a moderate problem

Increased Crop Diseases: Occasionally a minor problem

Hinders Crops: Could be a moderate problem

Establishment Challenges: Rarely a problem

Mature Incorporation Challenges: Could be a major problem

Comments Pro/Con: Can become a weed if tilled at wrong stage; Best if killed early

Additional Information

Additional Information from Managing Cover Crops
Profitably, 3rd Edition, Edited by Andy Clark,
Sustainable Agriculture Network
[Rye, Winter Cereal](#)

Other Resources

[Minnesota : Aerial Seeding Winter Rye In Southeast Minnesota](#)

[Minnesota: Are You Covered? Stop Soil Erosion on Canning Crop Acres](#)

[Minnesota: Rye as a Cover Crop Prior to No-Till Organic Soybeans in MN](#)

[Minnesota: Treat Your Fields to a Cover Crop or Green Manure](#)

http://www.uwex.edu/ces/crops/uwforage/RyeFor_Region

<http://www.ars.usda.gov/Main/docs.htm?docid=2>: Region

http://www.leopold.iastate.edu/research/eco_f_Region

<http://www.leopold.iastate.edu/pubs/nwl/2005/>: Region

<http://www.extension.iastate.edu/Publications>: Region

<http://efotg.sc.egov.usda.gov/references/pub>: Out of Region



Cover Crop Information Sheet

Considerations for using 60% Oats/40% OSR in Minnesota

There are no special considerations

Links to information on using Cover Crops in Minnesota can be found at: <http://mccc.msu.edu/states/Minnesota.html>

Location Information

Location: Minnesota - Martin
Cash Crop: Warm Season Vegetables
Plant Date:
Harvest Date:
Soil Drainage: Moderately Well Drained
Artificial Drainage: No
Flooding: No

Cultural Traits

Scientific Name: Avena sativa Oats
Scientific Name: Raphanus sativus Radish, Oilseed
Life Cycle: Cool Season Annual Oats
Life Cycle: Cool Season Annual Radish, Oilseed
Growth Habit: Upright Oats
Life Cycle: Upright Radish, Oilseed
Preferred Soil pH: 6.0-7
Min. Germination Temp.: 45F

Cover Crop Selection Information

Cover Crop Selected: 60% Oats/40% OSR
Cover Crop Attribute #1: Default
Cover Crop Attribute #2: Default
Cover Crop Attribute #3: Default
Use within the state: Emerging

Termination Information

Termination Methods: Freeze, Tillage, Chemical
Comments:

Planting Information

Drilled Seeding Depth: 1/4-1 inches
Drilled Seeding Rate: 18-30 lb./A/PLS
Drilled Seeding Rate: 3-6 lb./A/PLS R
Broadcast Seeding Rate: 25-42 lb./A/PLS
Broadcast Seeding Rate: 4-8.5 lb./A/PLS
Aerial Seeding Rate: 32-53 lb./A/PLS
Aerial Seeding Rate: 5-11 lb./A/PLS R
Seed Count: 19,600 Seeds/lb
Seed Count: 34,000 Seeds/lb
Frost Seed: No
Fly-free Date: No
Inoculation Type:
Comments: If participating in a cost share
required planting dates and rates.

Performance and Roles

Legume Nitrogen Source: Poor
Total Nitrogen: 20-60 (lb./A)
Dry Matter: 1700-5500 (lb./A/yr.)
Nitrogen Scavenger: Very Good
Soil Builder: Very Good
Erosion Fighter: Good
Weed Fighter: Good
Good Grazing: Very Good
Quick Growth: Excellent
Lasting Residue: Fair
Forage Harvest: Poor
Grain Seed Harvest: Poor
Cash Crop Interseed: Poor
Comments: Total N (lb/A) derived primarily from formula that relies on
dry matter (lb/A/yr) numbers.

Potential Disadvantages

Delayed Emergence: Rarely a problem
Increased Weed Potential: Rarely a problem
Increased Insects/Nematodes: Occasionally a minor problem
Increased Crop Diseases: Rarely a problem
Hinders Crops: Occasionally a minor problem
Establishment Challenges: Rarely a problem
Mature Incorporation Challenges: Rarely a problem
Comments Pro/Con: Oats are a host for Penetrans
Root-Lesion Nematode.

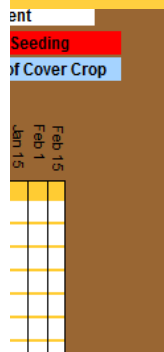
Additional Information

Additional Information from Managing Cover Crops
Profitably, 3rd Edition, Edited by Andy Clark,
Sustainable Agriculture Network

[Oats](#)
[Radish, Oilseed](#)

Other Resources

[Region: NRCS Michigan Cover Crop Technical Guide](#)
[Region: Oilseed Radish: A New Cover Crop for Michigan](#)
[Region: Cover Crops: Oilseed Radish](#)
[Out of Region: NRCS Conservation Practice Standard: Cover Crop](#)
[Out of Region: Oilseed Radish Cover Crop](#)



Questions?

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UMN Extension – Conservation Agronomy is on Facebook!